

Amendments to the Claims

1. (Currently Amended): A method of forming a patterned photoresist layer over a semiconductor substrate, comprising:

providing a semiconductor substrate having an outer surface; the outer surface comprising at least one of a silicon oxide-containing material, an organic-containing material, a silicon nitride-containing material, or a silicon carbide-containing material;

treating the outer surface with a basic fluid comprising at least one of tetramethyl ammonium hydroxide and ammonium fluoride;

applying photoresist onto the outer surface which has been treated with the basic treating fluid; and

patterning and developing the photoresist to form a patterned photoresist layer having laterally projecting feet proximate the semiconductor substrate outer surface.

2. (Original): The method of claim 1 wherein the outer surface is organic.

3. (Original): The method of claim 1 wherein the outer surface is inorganic.

4. (Previously Presented): The method of claim 1 wherein the outer surface comprises silicon nitride.

Claims 5 and 6 (Canceled)

7. (Original): The method of claim 1 wherein the outer surface comprises silicon dioxide.

8. (Original): The method of claim 1 wherein the outer surface comprises silicon carbide.

9. (Original): The method of claim 1 wherein the basic treating fluid has a pH of at least 8.5.

10. (Original): The method of claim 1 wherein the basic treating fluid has a pH of at least 10.5.

11. (Original): The method of claim 1 wherein the basic treating fluid is liquid.

12. (Original): The method of claim 1 wherein the basic treating fluid is gaseous.

13. (Original): The method of claim 1 wherein the basic treating fluid comprises tetramethyl ammonium hydroxide.

14. (Original): The method of claim 1 wherein the basic treating fluid comprises potassium hydroxide.

15. (Original): The method of claim 1 wherein the basic treating fluid comprises sodium hydroxide.

16. (Original): The method of claim 1 wherein the basic treating fluid comprises ammonium fluoride.

17. (Original): The method of claim 1 wherein the basic treating fluid comprises an alkyl amine.

18. (Previously Presented): A method of forming a patterned photoresist layer over a semiconductor substrate, comprising:

providing a semiconductor substrate having an outer surface;

treating the outer surface with a basic fluid, the basic treating fluid being at room ambient temperature and room ambient pressure during the treating;

applying photoresist onto the outer surface which has been treated with the basic treating fluid; and

patterning and developing the photoresist to form a patterned photoresist layer.

19. (Original): The method of claim 1 wherein the treating is for no more than 2 minutes.

20. (Original): The method of claim 1 wherein the treating is for no more than 1 minute.

21. (Original): The method of claim 1 wherein the photoresist is a positive photoresist.

22. (Original): The method of claim 1 wherein the photoresist is a negative photoresist.

23. (Original): The method of claim 1 wherein the outer surface is not exposed to any liquid intermediate the treating and the applying.

24. (Original): The method of claim 1 wherein the outer surface is at least partially dried intermediate the treating and the applying.

25. (Original): The method of claim 1 wherein the outer surface is completely dried intermediate the treating and the applying.

26. (Original): The method of claim 1 wherein,
the outer surface is not exposed to any liquid intermediate the treating and the applying; and
the outer surface is at least partially dried intermediate the treating and the applying.

27. (Original): The method of claim 26 wherein the basic treating fluid is liquid.

28. (Original): The method of claim 26 wherein the outer surface is completely dried intermediate the treating and the applying.

29. (Previously Presented): The method of claim 1 wherein the outer surface is reflective of incident radiation used in said patterning of the photoresist.

30. (Currently Amended): A method of forming a patterned photoresist layer over a semiconductor substrate, comprising:

providing a semiconductor substrate having an outer surface; the outer surface comprising at least one of a silicon oxide-containing material, an organic-containing material, a silicon nitride-containing material, or a silicon carbide-containing material;

treating the outer surface with a basic fluid comprising at least one of tetramethyl ammonium hydroxide and ammonium fluoride;

applying a positive photoresist onto the outer surface which has been treated with the basic treating fluid; and

patterning and developing the positive photoresist effective to form a patterned photoresist layer having increased footing at a base region of said layer than would otherwise occur in the absence of said treating the outer surface.

31. (Original): The method of claim 30 wherein the outer surface is not exposed to any liquid intermediate the treating and the applying.

32. (Original): The method of claim 30 wherein the outer surface is at least partially dried intermediate the treating and the applying.

33. (Original): The method of claim 30 wherein the outer surface is completely dried intermediate the treating and the applying.

34. (Original): The method of claim 30 wherein,
the outer surface is not exposed to any liquid intermediate the treating and the applying; and
the outer surface is at least partially dried intermediate the treating and the applying.

35. (Original): The method of claim 34 wherein the basic treating fluid is liquid.

36. (Original): The method of claim 34 wherein the outer surface is completely dried intermediate the treating and the applying.

37. (Original): The method of claim 30 wherein the outer surface is organic.

38. (Original): The method of claim 30 wherein the outer surface is inorganic.

39. (Previously Presented): The method of claim 30 wherein the outer surface comprises silicon nitride.

40. (Original): The method of claim 30 wherein the outer surface comprises silicon dioxide.

41. (Original): The method of claim 30 wherein the outer surface comprises silicon carbide.

42. (Original): The method of claim 30 wherein the basic treating fluid has a pH of at least 8.5.

43. (Original): The method of claim 30 wherein the basic treating fluid has a pH of at least 10.5.

44. (Original): The method of claim 30 wherein the basic treating fluid is liquid.

45. (Original): The method of claim 30 wherein the basic treating fluid is gaseous.

46. (Original): The method of claim 30 wherein the basic treating fluid comprises tetramethyl ammonium hydroxide.

47. (Original): The method of claim 30 wherein the basic treating fluid comprises potassium hydroxide.

48. (Original): The method of claim 30 wherein the basic treating fluid comprises sodium hydroxide.

49. (Original): The method of claim 30 wherein the basic treating fluid comprises ammonium fluoride.

50. (Original): The method of claim 30 wherein the basic treating fluid comprises an alkyl amine.

51. (Previously Presented): A method of forming a patterned photoresist layer over a semiconductor substrate, comprising:

providing a semiconductor substrate having an outer surface;

treating the outer surface with a basic fluid, the basic treating fluid being at room ambient temperature and room ambient pressure during the treating;

applying a positive photoresist onto the outer surface which has been treated with the basic treating fluid; and

patterning and developing the positive photoresist effective to form a patterned photoresist layer having increased footing at a base region of said layer than would otherwise occur in the absence of said treating the outer surface.

52. (Previously Presented): The method of claim 30 wherein the outer surface is reflective of incident radiation used in said patterning of the photoresist.

53. (Currently Amended): A method of forming a patterned photoresist layer over a semiconductor substrate, comprising:

providing a semiconductor substrate;

depositing an antireflective coating over the semiconductor substrate,

the antireflective coating having an outer surface; the outer surface comprising at least one of a silicon oxide-containing material, an organic-containing material, a silicon nitride-containing material, or a silicon carbide-containing material;

treating the outer surface with a basic fluid comprising at least one of tetramethyl ammonium hydroxide and ammonium fluoride;

applying a positive photoresist onto the outer surface which has been treated with the basic treating fluid; and

patterning and developing the positive photoresist effective to form a patterned photoresist layer having increased footing at a base region of said layer than would otherwise occur in the absence of said treating the outer surface.

54. (Original): The method of claim 53 wherein the outer surface is not exposed to any liquid intermediate the treating and the applying.

55. (Original): The method of claim 53 wherein the outer surface is at least partially dried intermediate the treating and the applying.

56. (Original): The method of claim 53 wherein the outer surface is completely dried intermediate the treating and the applying.

57. (Original): The method of claim 53 wherein,
the outer surface is not exposed to any liquid intermediate the treating and the applying; and
the outer surface is at least partially dried intermediate the treating and the applying.

58. (Original): The method of claim 57 wherein the basic treating fluid is liquid.

59. (Original): The method of claim 57 wherein the outer surface is completely dried intermediate the treating and the applying.

60. (Original): The method of claim 53 wherein the outer surface is organic.

61. (Original): The method of claim 53 wherein the outer surface is inorganic.

62. (Original): The method of claim 53 wherein the basic treating fluid has a pH of at least 8.5.

63. (Original): The method of claim 53 wherein the basic treating fluid has a pH of at least 10.5.

64. (Original): The method of claim 53 wherein the basic treating fluid is liquid.

65. (Original): The method of claim 53 wherein the basic treating fluid is gaseous.

66. (Original): The method of claim 53 wherein the basic treating fluid comprises tetramethyl ammonium hydroxide.

67. (Original): The method of claim 53 wherein the basic treating fluid comprises potassium hydroxide.

68. (Original): The method of claim 53 wherein the basic treating fluid comprises sodium hydroxide.

69. (Original): The method of claim 53 wherein the basic treating fluid comprises ammonium fluoride.

70. (Original): The method of claim 53 wherein the basic treating fluid comprises an alkyl amine.

71. (Previously Presented): A method of forming a patterned photoresist layer over a semiconductor substrate, comprising:

providing a semiconductor substrate;

depositing an antireflective coating over the semiconductor substrate, the antireflective coating having an outer surface;

treating the outer surface with a basic fluid, the basic treating fluid being at room ambient temperature and room ambient pressure during the treating;

applying a positive photoresist onto the outer surface which has been treated with the basic treating fluid; and

patterning and developing the positive photoresist effective to form a patterned photoresist layer having increased footing at a base region of said layer than would otherwise occur in the absence of said treating the outer surface.

72. (Previously Presented): The method of claim 1 wherein the outer surface comprises a silicon oxide-containing material.

73. (Previously Presented): The method of claim 30 wherein the outer surface comprises a silicon oxide-containing material.

74. (Previously Presented): The method of claim 53 wherein the outer surface comprises a silicon oxide-containing material.

75. (Previously Presented): The method of claim 53 wherein the outer surface comprises an organic-containing material.

76. (Previously Presented): The method of claim 53 wherein the outer surface comprises a silicon nitride-containing material.

77. (Previously Presented): The method of claim 53 wherein the outer surface comprises a silicon carbide-containing material.